# SERVICE BULLETIN

M-1232A December 9, 2008

# PISTON RING REPLACEMENT

## Reason For Revision

The purpose of this revision is to inform dealers that XL Sportster engines have been included in this bulletin.

## Purpose

To notify service personnel on when and when not to replace piston rings and to update the service manuals.

## Motorcycles Affected

All motorcycles with Twin-Cam engines and all XL Sportster models.

## Required Dealer Action

Currently our service literature suggests that rings should be replaced when they are removed from the cylinder. Recent discussions with our piston ring suppliers have determined that replacement of the piston rings is not always necessary when the cylinder is removed.

Please follow these guidelines for piston ring replacement:

- When the cylinder is removed from the motorcycle and the piston rings are not removed from the piston, the piston rings do not need to be replaced.
- If the piston rings are removed from the piston, or the cylinder is replaced, then new piston rings are required.

If the engine needs to be disassembled, piston rings should be checked for wear. A 3-point cylinder leakdown test should be performed. If the piston rings pass the 3-point leak down test, a visual check should be performed when the cylinder is removed to see if the piston is at or near the end of its life cycle.

## Piston Ring Inspection

### 3-Point Cylinder Leakdown Test

*NOTE*

Removal of the rocker arms and push rods will allow a cylinder leakdown test with the piston in any position, without the valves opening.

1. Remove rocker arms and push rods. See service manual.
2. Clean dirt from around spark plugs and remove spark plugs.

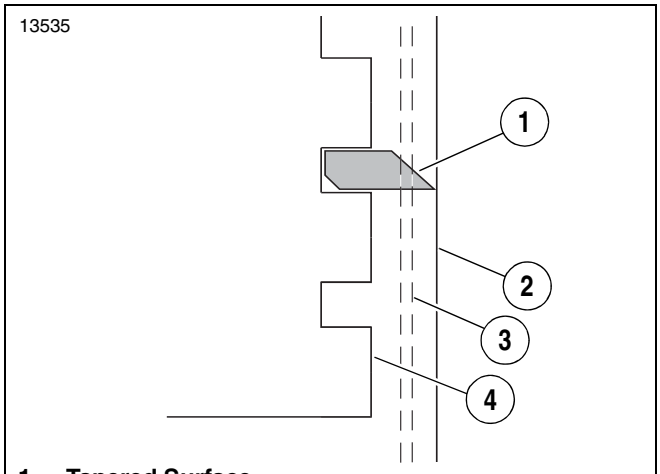
*NOTE*

Before performing the cylinder leakdown test, verify that the tester itself is free from leakage to obtain the most accurate test results. Connect the leakdown tester to an air supply. Apply a soap and water solution around all tester fittings and check for any bubbles that would indicate air leaking from the tester.

3. Perform a cylinder leakdown test with the piston at top dead center, center, and bottom dead center. Leakage greater than 10 percent indicates internal engine problems.
4. Listen for air leaks at throttle body intake, exhaust, head gasket, and push rod tubes.
5. If excessive air is found leaking into the crankcase, which can be heard through the push rod openings in the lifter cover, replace the piston rings. If excessive air is found leaking anywhere else, see service manual.
6. Perform visual check of piston rings.

### Piston Ring Visual Check

See Figure 1. Check the tapered surface (1) of the second piston ring (compression/oil control ring) for wear. The lower edge of the tapered surface normally wears down with use. If 50-75 percent (3) of the taper is worn away, all the piston rings on the piston must be replaced.




1. **Tapered Surface**
2. **Cylinder Wall**
3. **50-75 Percent Wear Area on Tapered Surface**
4. **Piston**

**Figure 1. Piston Ring Wear Area**

*IMPORTANT NOTE*

In the interest of preserving customer safety and satisfaction, always check for outstanding recalls whenever any motorcycle is brought into your dealership for either maintenance or service.

| ROUTING | SERVICE MANAGER | SALES MANAGER | PARTS MANAGER | WARRANTY PROCESS MANAGER | LEAD TECHNICIAN | TECHNICIAN NO.1 | TECHNICIAN NO. 2 | TECHNICIAN NO. 3 | RETURN THIS TO |
|---|---|---|---|---|---|---|---|---|---|
| INITIAL HERE | | | | | | | | | |